

CLAIMS

1. A method for generating pilot estimates indicative of a response of
2 a communication channel between a transmitter unit and a receiver unit,
comprising:

4 receiving and processing a modulated signal at the receiver unit to derive
received pilot symbols for a pilot included in the modulated signal;

6 estimating one or more characteristics of the communication channel
based on the received pilot symbols; and

8 filtering the received pilot symbols in accordance with a particular filter
response to provide filtered pilot symbols that comprise the pilot estimates,
10 wherein the particular filter response is selected from among a plurality of
possible filter responses based on the one or more estimated channel
12 characteristics.

2. The method of claim 1, wherein the one or more estimated
2 channel characteristics are indicative of noise in the communication channel.

3. The method of claim 1, wherein the one or more estimated
2 channel characteristics are indicative of fading in the communication channel.

4. The method of claim 1, further comprising:
2 estimating pilot power based on the received pilot symbols;
estimating noise power based on the received pilot symbols; and
4 deriving a pilot-to-noise power ratio based on the estimated pilot and
noise power; and
6 wherein the one or more channel characteristics are estimated based on
the pilot-to-noise power ratio.

5. The method of claim 4, wherein the noise power is estimated
2 based on differences between successive received pilot symbols.

6. The method of claim 4, further comprising:

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12. The method of claim 11, wherein a filter response with a narrow
2 bandwidth is selected if the one or more estimated channel characteristics
indicate large amounts of noise in the communication channel.

13. The method of claim 11, wherein a filter response with a narrow
2 bandwidth is selected if the one or more estimated channel characteristics
indicate low fading in the communication channel.

14. The method of claim 11, wherein the plurality of different
2 bandwidths are approximately geometrically related.

15. The method of claim 1, wherein the filtering is achieved with a
2 finite impulse response (FIR) filter.

16. The method of claim 1, wherein the filtering is achieved with an
2 infinite impulse response (IIR) filter.

17. The method of claim 1, wherein the plurality of possible filter
2 responses are derived from a plurality of sets of coefficients.

18. The method of claim 1, wherein the modulated signal is a CDMA
2 signal.

19. In a CDMA system, a method for generating pilot estimates
2 indicative of a response of a communication channel between a base station
and a terminal, comprising:

4 receiving and processing a forward modulated signal at the terminal to
derive received pilot symbols for a pilot included in the forward modulated
6 signal;

estimating one or more characteristics of the communication channel;
8 and

filtering the received pilot symbols in accordance with a particular filter
10 response to provide filtered pilot symbols, wherein the particular filter response
is selected from among a plurality of possible filter responses based on the one

12 or more estimated channel characteristics, wherein the plurality of possible filter
responses are associated with a plurality of different bandwidths; and

14 wherein the one or more channel characteristics are estimated based on
quality of either the received pilot symbols or the filtered pilot symbols.

20. The method of claim 19, wherein the quality of the received pilot
2 symbols is derived based on estimates of pilot power and noise power.

21. The method of claim 19, wherein the quality of the filtered pilot symbols is derived based on prediction errors between the filtered pilot symbols and the received pilot symbols.

22. The method of claim 19, wherein a narrow bandwidth is selected if
2 the one or more estimated channel characteristics indicate large amounts of
noise or low fading in the communication channel.

23. A method for generating pilot estimates indicative of a response of
2 a communication channel between a transmitter unit and a receiver unit,
comprising:

4 receiving and processing a modulated signal at the receiver unit to derive
received pilot symbols for a pilot included in the modulated signal;

6 filtering the received pilot symbols in accordance with a plurality of filter responses to provide a plurality of sequences of filtered pilot symbols;

8 deriving prediction errors for each filter response based on the received
pilot symbols and the filtered pilot symbols derived from the filter response; and

10 providing the filtered pilot symbols derived from the filter response
associated with minimum prediction errors as the pilot estimates.

24. The method of claim 23, wherein the filtering with the plurality of
2 filter responses are performed concurrently.

25. The method of claim 23, wherein the deriving prediction errors
2 includes:
for each filter response,

8 a first channelizer coupled to the despreaders and operative to
receive and channelize the despread samples to provide data symbols;

10 a second channelizer coupled to the despreaders and operative to
receive and channelize the despread samples to provide pilot symbols
12 for a pilot included in the received signal;

a filter coupled to the second channelizer and operative to receive
14 and filter the pilot symbols in accordance with a particular filter response
to provide filtered pilot symbols;

16 a control unit coupled to the filter and operative to estimate, based
on the pilot symbols, one or more characteristics of the communication
18 channel for the signal instance being processed by the finger processor,
and to select the particular filter response from among a plurality of
20 possible filter responses based on the one or more estimated channel
characteristics; and

22 a pilot demodulator coupled to the first channelizer and the filter
and operative to receive and demodulate the data symbols with the
24 filtered pilot symbols to provide demodulated symbols.

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